Search for Earthquake Effects in TOPEX/POSEIDON Data

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We have searched TOPEX/POSEIDON sea surface height data for effeets from six earthquakes of magnitude > 6.1 during 1992-1994 in the western Pacific, including the one near Hokkaido, Japan in July 1993. Two effects were investigated: tsunamis and changes in the mean sea surface that might indicate changes in bottom topography, TOPEX/POSEIDON began producing data in October 1992. 'l'he sea surface heights have an accuracy of better than 5 cm.

The tsunami search was conducted along tracks within 4 hours and 5000 km of the earthquake occurrence. In addition to visual searches in along track sea surface height differences, correlation anal yses with several plausible waveforms were carried out. Simulations were used to determine the amplitude of open ocean tsunamis which could have been detected.

The search for differences in mean sea surface before and after the quakes was done on tracks within 300 km of the epicenter. Average tracks from varying numbers of passes before and after were difference in order to determine errors in the search process. Unfortunately, three of the quakes occurred in December 1992 which limited both the quantity and quality of the pre-quake data, The detectable change in sea surface height with eight passes before and after is estimated to be 2 cm. The bottom displacement causing such a surface change will depend on the water depth.

1. 1994 Fall Meeting

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4 . 0

5, (a) 005 Tsunamis

(b) 4564 Tsunamis
4556 Sea level variations
7255 Surface waves

6. N/A

7. O%

8. Charge $50 to P S Callahan

9. C

10. N/A

11. N/A